

When a gas or a liquid flows through a pipe, the flow of fluid through a pipe is resisted by viscous shear stresses within the fluid and the turbulence that occurs along the internal pipe wall. The frictional losses are mainly caused in a straight pipe, friction loss induced in fittings, such as bends, couplings, valves, or transitions in hose or pipe accounts for minor losses. In addition to the energy lost due to frictional forces, there will be a loss in energy when the fluid flows through fittings, such as valves, elbows, contractions and expansions.